We claim:

1. A drilling mud reclamation system comprising:

(a) a mud inlet line adapted to be connected to a source of solids-laden drilling mud;

(b) a first stage centrifuge provided with the mud from the source for separating the heavy weight solid components from the mud and forming a first stage liquid discharge;

(c) a second stage centrifuge provided with the first stage liquid discharge for removing lighter weight solid components in the first stage liquid discharge and for forming a second stage liquid discharge and a second stage solids discharge defining a weight;

(d) a mass flow sensor for measuring weight of the second stage solids discharge; and

(e) a flow rate sensor for measuring the flow rate of first stage liquid discharge through the second stage centrifuge.

2. The system of claim 1 including first and second stage pumps connected to the respective inputs of said first and second stage centrifuges.

3. The system of claim 1 wherein the first stage liquid discharge is input into a surge tank and the surge tank connects through a motor-driven outlet valve to the second stage centrifuge.

4. The system of claim 3, further comprising a sensor for measuring liquid level in the surge tank.

5. The system of claim 1, wherein the mass flow sensor communicates with the second stage liquid discharge from the second stage centrifuge, and wherein the mass flow sensor comprises:

a. a liquid receiving tank;

b. a liquid level indicator for indicating liquid level in the liquid receiving tank; and

c. a weight sensor to measure the weight of the liquid in the tank.

6. The system of claim 5, wherein the mass flow sensor is adapted for a determination of the difference in solids into and out of the second stage centrifuge.

7. The system of claim 5, wherein the liquid receiving tank is mounted for axial rotation on an axis.

8. The system of claim 1, wherein the second stage centrifuge forms a second stage solids discharge and the mass flow sensor communicates with the second stage solids discharge.

9. The system of claim 8, further comprising a cuttings drier to receive the second stage solids discharge and to remove liquid from the second stage solids discharge.

10. The system of claim 9, further comprising:

a. first and second stage pumps connected to the respective inputs of said first and second stage centrifuges; and

b. a central processor for monitoring and controlling the first and second stage centrifuges, the first and second stage pumps, and the cuttings drier.

11. The system of claim 1, further comprising a central processor for monitoring and controlling the operation of the first and second stage centrifuges.

12. The system of claim 2, further comprising a central processor for monitoring and controlling the operation of the first and second stage pumps.

13. The system of claim 12, wherein the central processor controls the operation of the second stage pump at the point in its operational characteristic for the maximum removal of lighter weight solid components from the drilling mud.

14. The system of claim 13, further comprising a first mud flow sensor on the first stage pump and a second mud flow sensor on the second stage pump.

15. The system of claim 14, wherein the central processor is adapted to calculate the quantity of low gravity solids removed by the reclamation system based on the mud flow sensed by the second mud flow sensor and the weight of solids removed by the second stage centrifuge as sensed by the mass flow sensor.

16. The system of claim 15, wherein the central processor is further adapted to calculate economic savings from the quantity of drilling mud which need not be added to the system for dilution purposes.

17. The system of claim 15, wherein the central processor is further adapted to modify the operation of the second stage centrifuge based on the mud flow sensed by the second mud flow sensor and the weight of solids removed by the second stage centrifuge as sensed by the mass flow sensor.

18. The system of claim 12, further comprising:

a. means for determining the quantity of high gravity solids removed by the first stage centrifuge; and

b. wherein the central processor is adapted to vary the bowl speed of the first stage centrifuge to maximize the high gravity solids content of the first centrifuge solids discharge.

19. A method of determining the effectiveness of a centrifuge in removing solids from a solids laden liquid, comprising the steps of:

a. measuring the weight and flow rate of a predetermined volume of a sample of the solids-laden liquid;

b. processing the solids laden liquid through the centrifuge to remove solids from the solids laden liquid to produce a centrate and a solids discharge;

c. measuring the weight and flow rate of the predetermined volume of the centrate;

d. comparing the weights and flow rates of the samples of solids-laden liquid and the centrate;

e. calculating the quantity of solids removed by the centrifuge.

20. The method of claim 19, wherein the solids laden liquid is drilling mud, and further comprising the step of calculating the dilution costs of drilling mud saved by the system.

21. The method of claim 20, further comprising the steps of

a. determining the per unit cost of centrate; and

b. calculating the economic value of the centrate saved by the method.

22. The method of claim 19, further comprising the step of measuring the total discharge of contaminants from the system.

23. The method of claim 22, further comprising the step of generating a report of the total discharge of contaminants from the system.

24. The method of claim 19, further comprising the steps of:

a. processing the solids discharge in a cuttings drier to produce a drier fluids discharge and a drier solids discharge; and

b. determining the flow rate of the drier fluids discharge.

25. The method of claim 24, further comprising the step of determining the economic savings represented by the drier fluids discharge.

26. In a drilling mud reclamation system comprising a mud inlet line adapted to be connected to a source of solids-laden drilling mud; a first stage pump provided with the mud from the source; a first stage centrifuge to receive mud from the first stage pump and for separating the heavy weight solid components from the mud and forming a first stage liquid discharge; a second stage pump to receive the first stage liquid discharge; a second stage centrifuge to receive the first stage liquid discharge from the second stage pump and for removing lighter weight solid components in the first stage liquid discharge and for forming a second stage liquid discharge and a second stage solids discharge defining a weight; and a cuttings drier to receive the second stage solids discharge to produce drier liquid discharge and a drier solids discharge; a monitoring and control system for the reclamation system comprising:

a. a mass flow sensor for measuring weight of the second stage solids discharge; and

b. a flow rate sensor for measuring the flow rate of first stage liquid discharge through the second stage centrifuge;

c. a central processor adapted to receive signals from the mass flow sensor and from the flow rate sensor.